New Economic Thinking and Climate Change

Garrison Institute – Climate, Mind, and Behaviour Symposium

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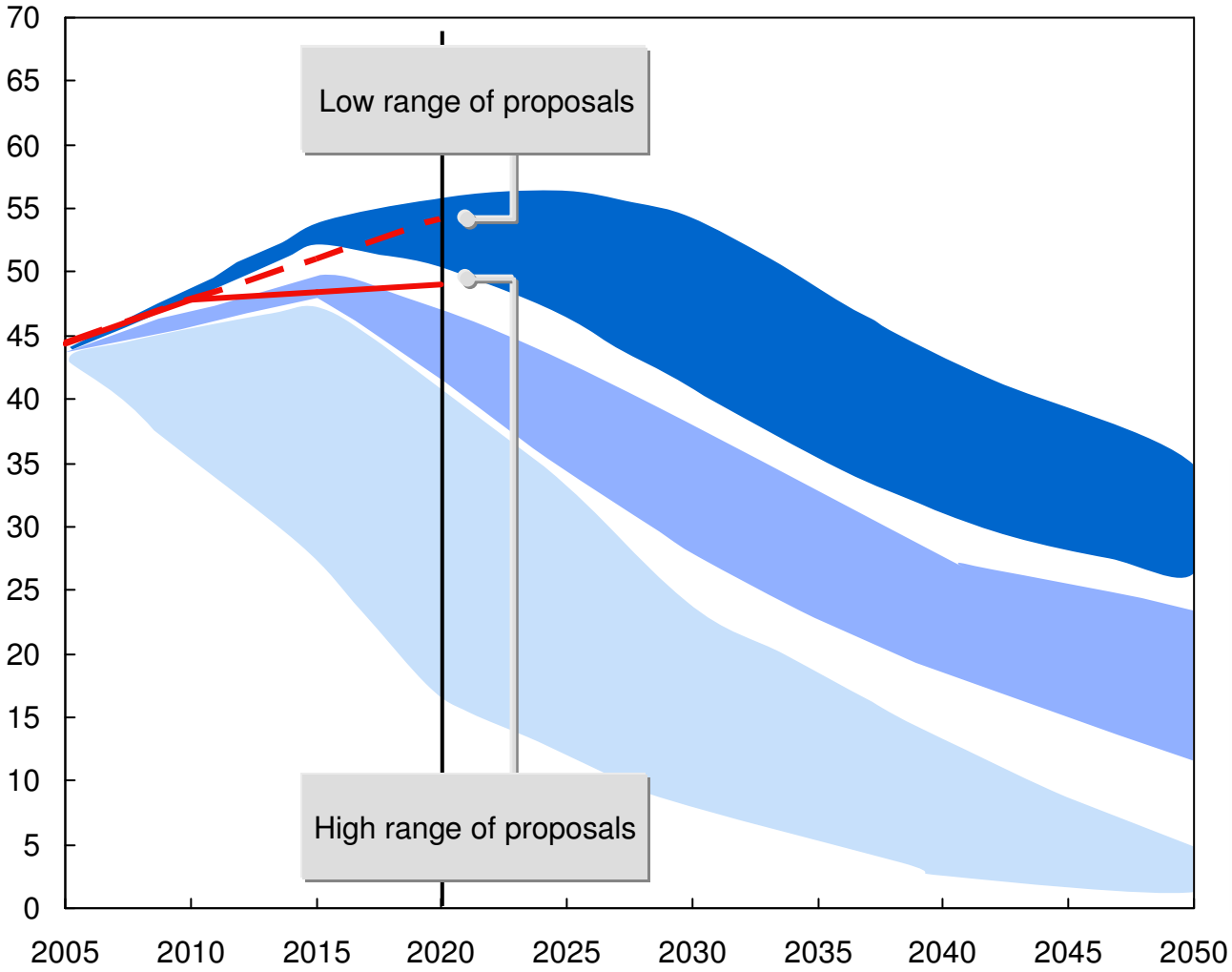
March 10, 2010

Motivation – we are not on track for 2 degrees after Copenhagen

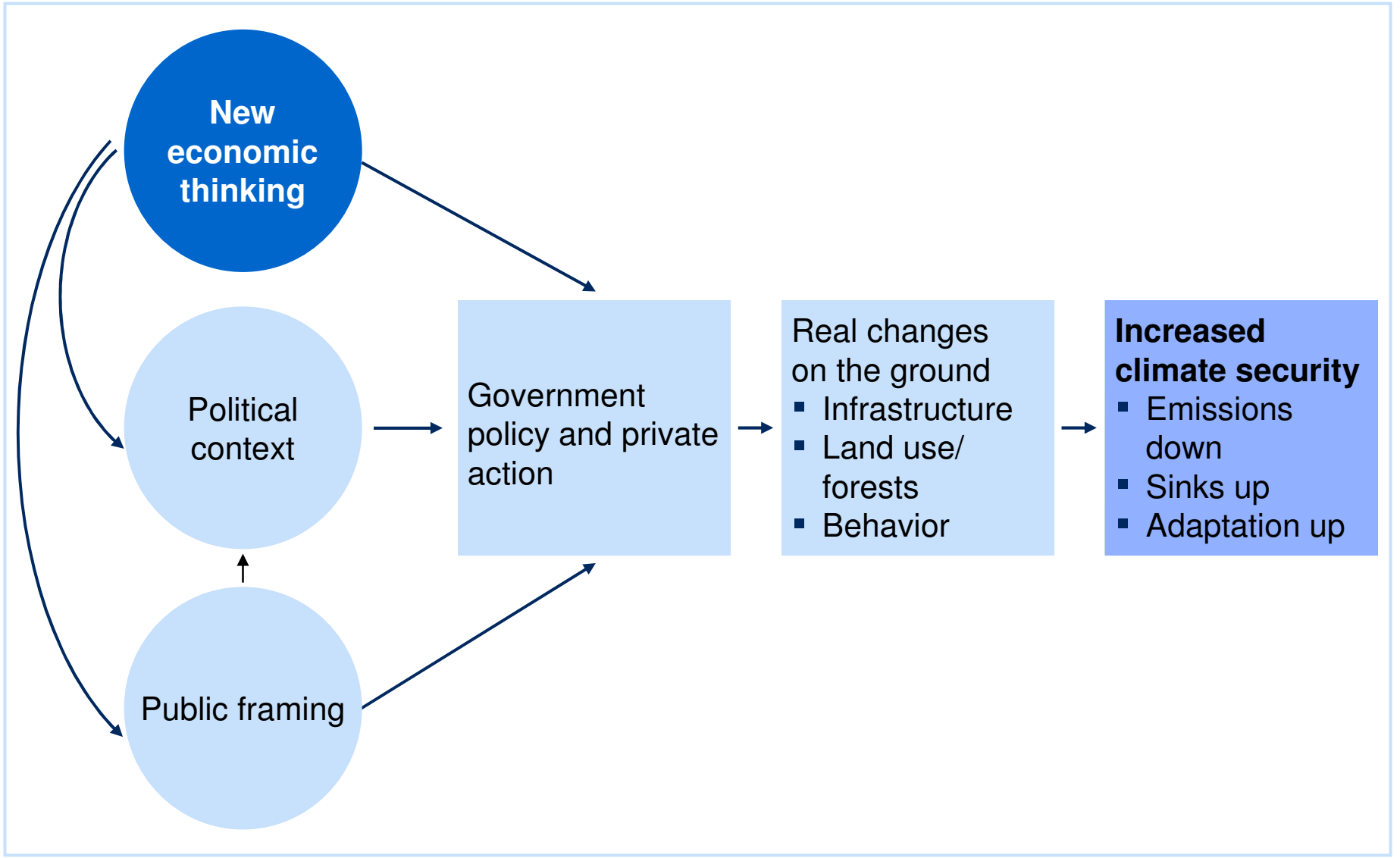
Global GHG emissions and pathways for GHG stability, Gt CO_2e, 2020



Probability of temperature increase under 2°C	Expected temperature increase
15-30%	3.0°C
40-60%	2.0°C
70-85%	1.8°C

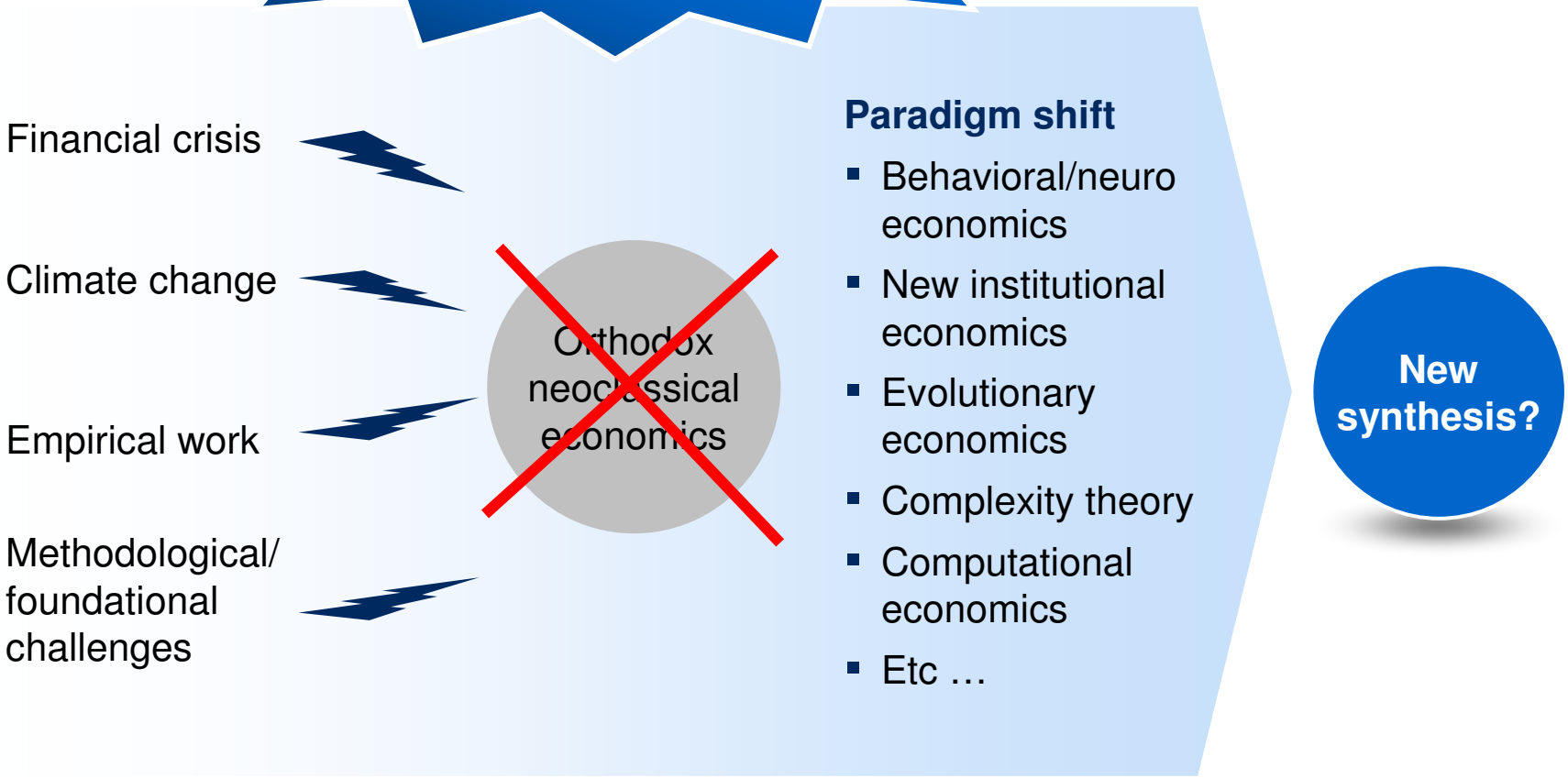
SOURCE: "Taking Stock – Emissions Levels Implied by the Copenhagen Accord," Project Catalyst, February 2010.

A theory of change – how new economic thinking might influence the climate issue



An exciting time in economics

It's the best possible time to be alive, when almost everything you thought you knew is wrong.
– Tom Stoppard, *Arcadia*



What might a new economic synthesis look like?

	Traditional economics	'New economics'
Dynamics	▪ Economies are closed, static, linear systems in equilibrium	▪ Economies are open, dynamic, non-linear systems far from equilibrium
Agents	▪ Homogeneous agents – Only use rational deduction – Make no mistakes, have no biases – No need to learn	▪ Heterogeneous agents – Mix deductive/inductive decisions – Subject to errors and biases – Learn and adapt over time
Networks	▪ Assume agents only interact indirectly through market mechanisms	▪ Explicitly account for networks of agents and institutions
Emergence	▪ Treats micro and macro-economics as separate disciplines	▪ Macro patterns emerge from micro behaviors and interactions
Evolution	▪ No endogenous mechanism for creating novelty or growth in order and complexity	▪ Evolutionary process creates novelty and growing order and complexity over time

SOURCE: Beinhocker (2006)

Why new economic thinking is critical for climate change

Traditional economic assumptions

- Perfectly rational optimizing agents
- Gaussian distributions of risk
- Time is reversible (symmetry)
- Time consistency of discounting behavior
- Linearity
- No fundamental connection between physical and economic world (infinite production function)
- Very limited view of innovation
- Hedonic dominance of economic factors

Climate change reality

- Boundedly rational, social, agents
- Fat-tailed distributions of risk
- Numerous irreversibilities (asymmetry)
- Time inconsistent (hyperbolic) discounting
- Non-linear effects, tipping points
- Deep interconnections between physical and economic worlds (e.g. energy, water, land-use)
- Innovation central to response
- Well-being affected by many non-economic factors

We are using an intellectual framework that is fundamentally mismatched with the world's most important challenge

The political context – the great contradiction

Addressing climate change is …

… easy

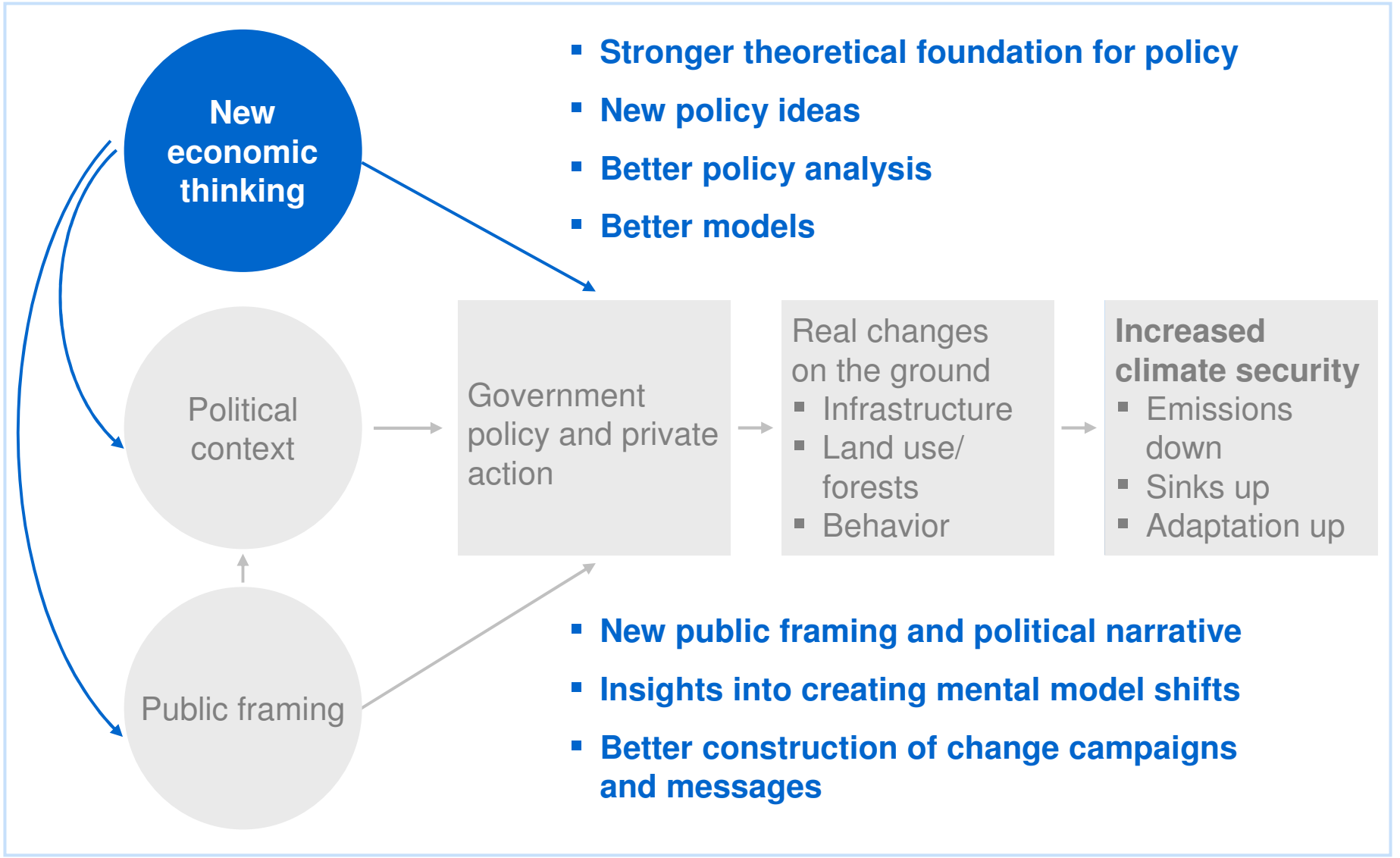
- Current, commercially available technology can address 77% of emissions reductions needed by 2020
- Proven policies in eight areas can drive the needed reductions, e.g. renewable policies, vehicle standards, building codes, forestry policies, etc.
- Investments required less than 5% increase in BAU fixed capital investment
- Stimulus from increased investment will increase medium-term GDP growth
- Employment shifts across sectors, but no permanent effect – transitions can be handled with adjustment policies
- Enormous opportunities and co-benefits from clean energy innovation

… hard

- Framing of political narrative
  - Climate vs. growth
  - Hurts competitiveness
  - Zero sum game – a burden to be avoided
  - Certain near-term costs for uncertain long-term gains
- Losers clearly identified and well organized
- Low trust in scientific and political institutions
- Categorized as “environmental issue” associated with the Left

Will not get real transformation without a fundamental re-framing of the political narrative

How new economics might influence the climate debate



Some specific contributions behavioral/neuro economics might make

- **Stronger theoretical foundation for policy**
- **New policy ideas**
- **Better policy analysis**
- **Better models**

Examples

- Mitigation potential from behavioral change
- Behavioral barriers in implementing policies
- Opportunities to leverage behavioral phenomena (e.g., social behaviors)
- Realistic agent behavior in integrated climate-economic models

- **New public framing and political narrative**
- **Better understand mental model shifts**
- **Better construction of change campaigns and messages**

- Understand acceptance issues in climate science debate
- Address cognitive biases/failures
- Mental model shifts required for action
- Understand socialization of behavior change
- Narrative construction that leverages behavioral insights